

# NANTUCKET WASTEWATER PLAN UPDATE

## Board of Selectmen Workshop

4 Fairgrounds Road Community Room  
Wednesday, March 9, 2016 6:00 pm

# *Agenda*

- Current Status of Overall Wastewater Planning
  - Comprehensive Wastewater Management Plan (CWMP) Update
  - Surfside WWTF Improvements Project
  - Sewer Extension Implementation Plan
    - Nantucket Harbor Shimmo
    - PLUS
  - Estimated Project Costs and Capital Cost Recovery Plan
    - Betterments
    - Property Taxes
  - April 2016 Annual Town Meeting Actions



# *Comprehensive Wastewater Management Plan Update*

- Incorporates Massachusetts Estuaries Program Results Into Recommended Plan
  - Nitrogen Reduction to Meet Total Maximum Daily Loads (TMDLs)
- Ranks “Areas of Need”
- Septage Management Solutions
  - Board of Health Local Regulations
- Full Use of Surfside WWTF Permit - Flows
  - Madaket WWTF Eliminated
- 20-Year Planning Document



# *Adaptive Management Plan to Meet Nitrogen Reductions*

## Structured Nitrogen Reducing Solutions

- Address all Needs Areas With a Plan Defined as a Structured, Iterative Process and Adapt As Necessary
  - Sewer Expansion
- Aim to Reduce Nutrient Loading Over Time – Water Quality Monitoring Program
  - Start With Plans That Give the Town the Biggest Bang for its Buck
- Add or Reduce Solutions as Needed to Meet Established Thresholds
  - Hummock Pond Breach      – Jetties Reconstruction
  - Sesachacha Pond Breach





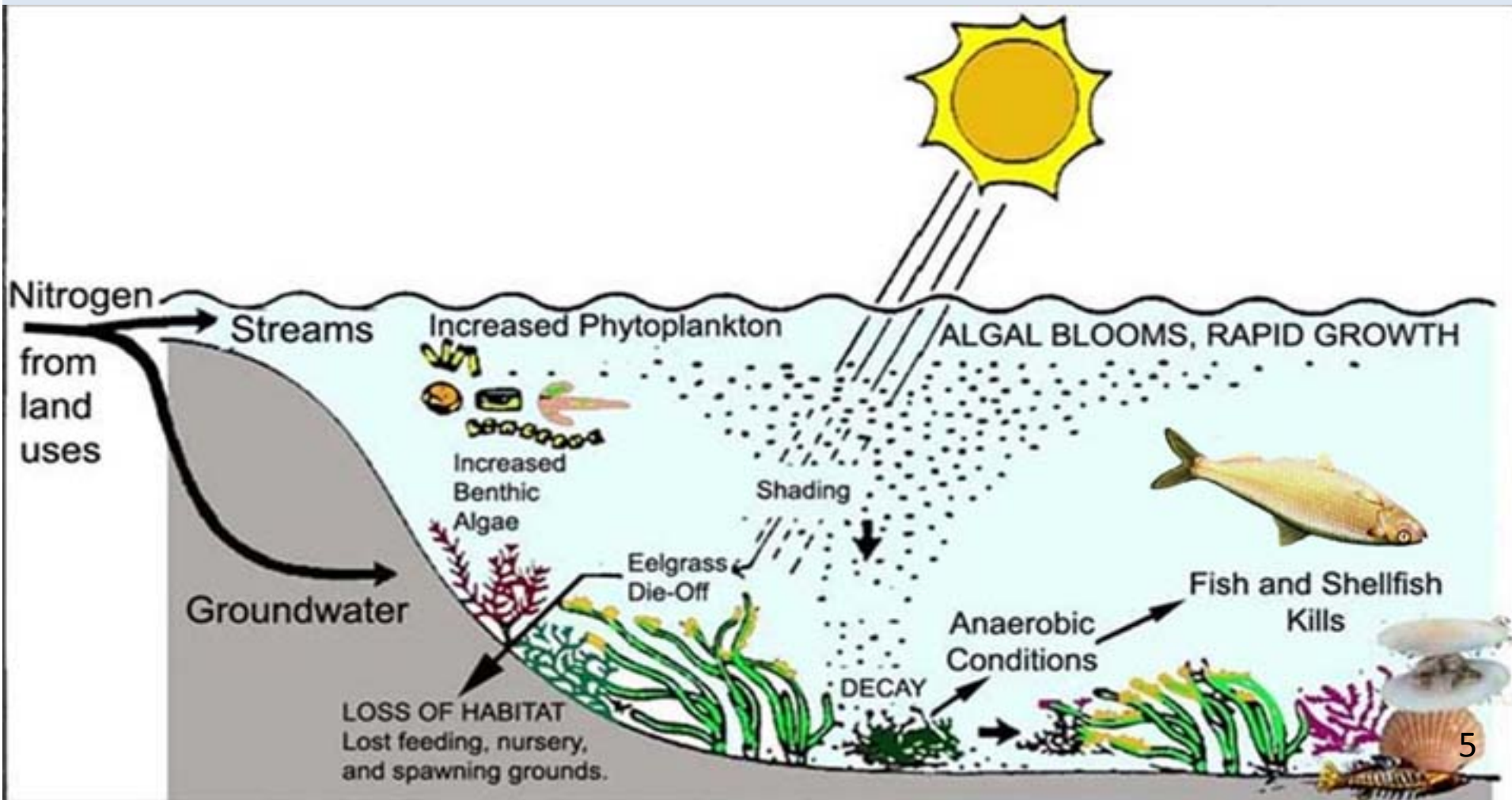
# *Adaptive Management Plan to Meet Nitrogen Reductions*

## Non-Structured Nitrogen Reducing Solutions

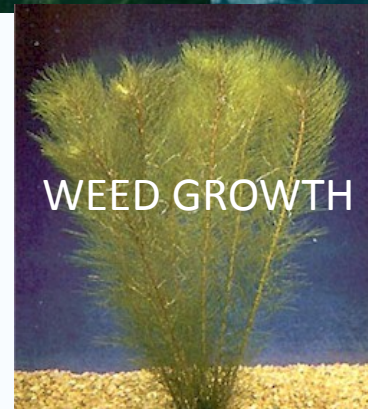
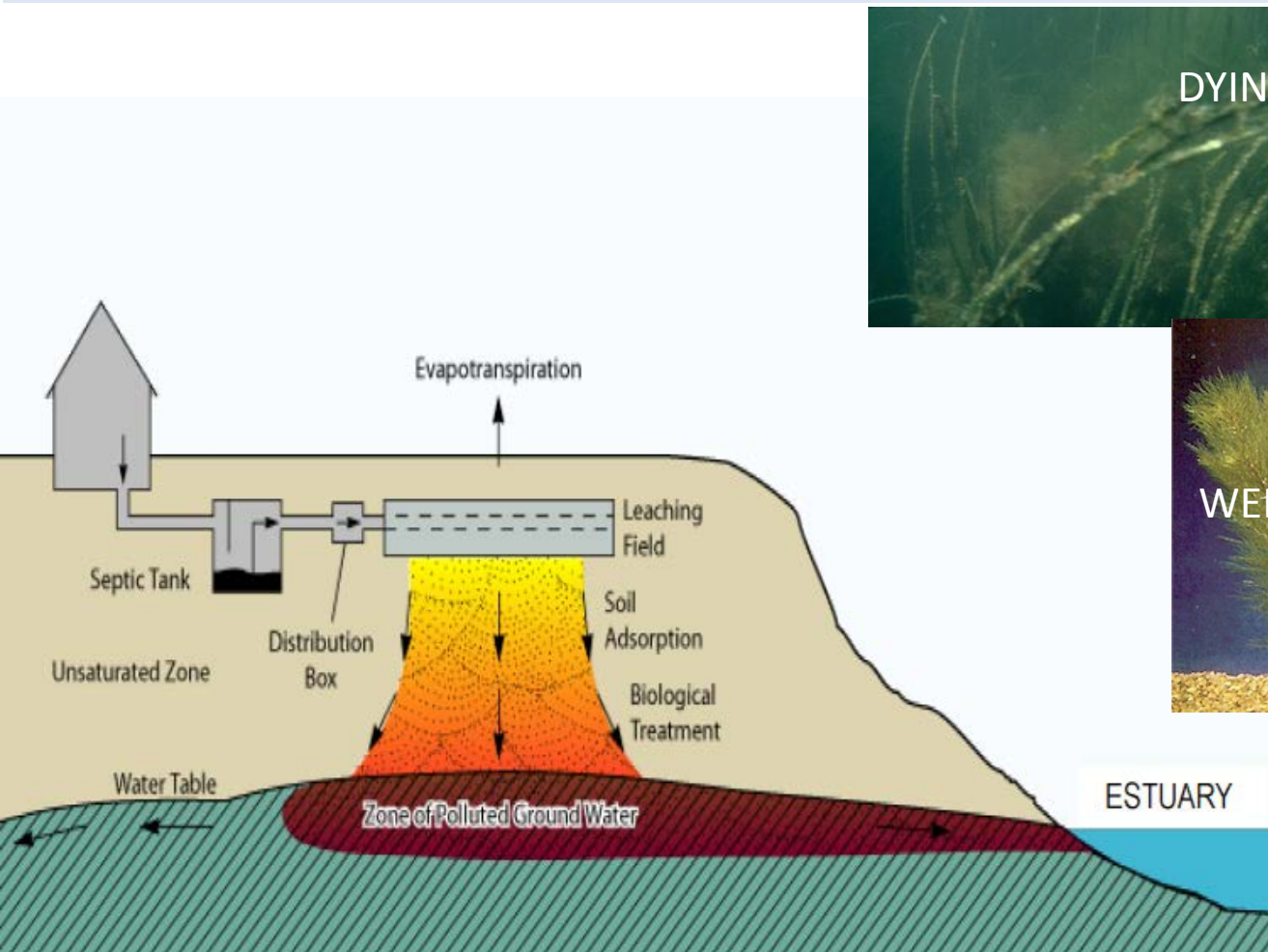
- Septage Management Plan
  - Pumping Incentive
  - Innovative/Alternative Systems
- Fertilizer Management
  - Education and Enforcement of Local Regulations
- Stormwater Management
  - Island-wide
  - Known Direct Discharges



# *Nitrogen Pollution From Land Uses*



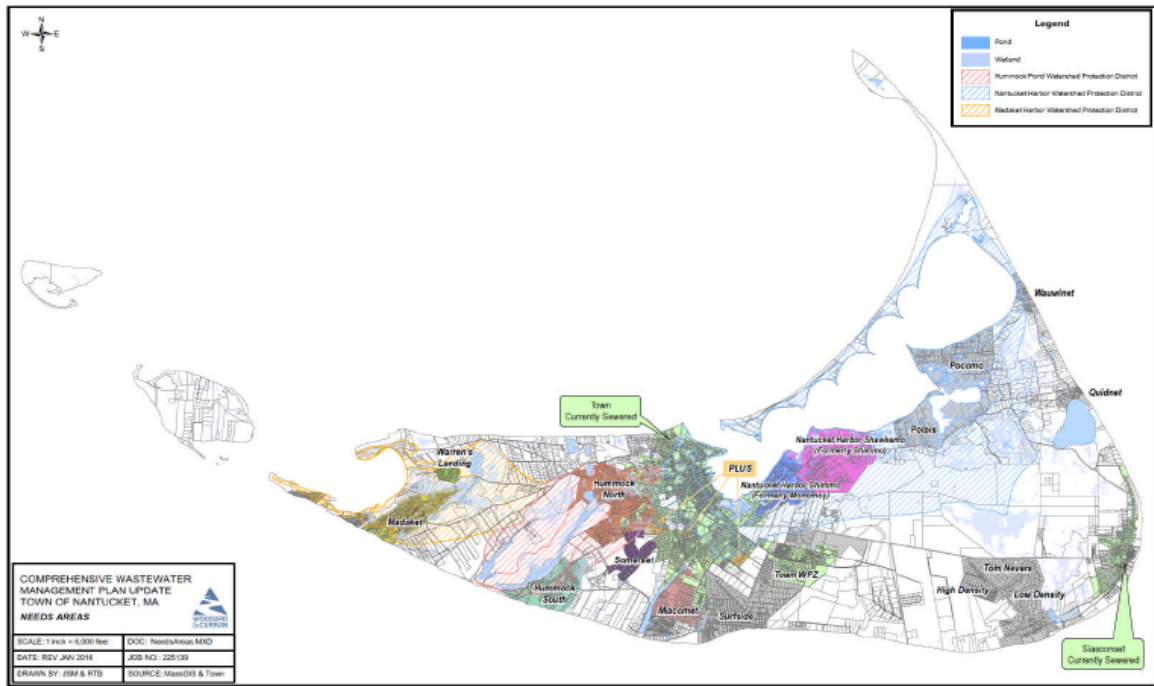
# Septic Systems and Nitrogen Pollution Impacts





# Comprehensive Wastewater Management Plan Update Final Recommended Plan

## Town of Nantucket CWMP Update



### AREAS RECOMMENDED FOR SEWER SERVICE

<p><b>MADAKET</b></p> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>Draft TMDL – Water Quality</li> <li>Madaket Harbor Watershed</li> <li>Small, Dense Lots</li> <li>Severe Soils</li> <li>Severe Groundwater</li> <li>Inability to Meet Title 5</li> <li>Inability to Meet Local BOH Regs</li> <li>Private Water Supply</li> </ul> <p><b>Recommendation:</b> Municipal Sewer at Surfside WWTF</p>	<p><b>HUMMOCK POND SOUTH</b></p> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>Pending TMDL – Water Quality</li> <li>Hummock Pond Watershed</li> <li>Small, Dense Lots</li> <li>Severe Soils</li> <li>Inability to Meet Title 5</li> <li>Inability to Meet Local BOH Regs</li> <li>Private Water Supply</li> </ul> <p><b>Recommendation:</b> Municipal Sewer at Surfside WWTF</p>
<p><b>WARRENS LANDING</b></p> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>Draft TMDL – Water Quality</li> <li>Madaket Harbor Watershed</li> <li>GW Flow Towards Hither Creek Water Quality</li> <li>Small, Dense Lots</li> </ul> <p><b>Recommendation:</b> Municipal Sewer at Surfside WWTF</p>	<p><b>MACOMET</b></p> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>Water Quality</li> <li>Small, Dense Lots</li> <li>Severe Soil and Groundwater Conditions</li> </ul> <p><b>Recommendation:</b> Municipal Sewer at Surfside WWTF</p>
<p><b>HUMMOCK POND NORTH</b></p> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>Pending TMDL – Water Quality</li> <li>Hummock Pond Watershed</li> <li>Head of Hummock</li> </ul> <p><b>Recommendation:</b> Municipal Sewer at Surfside WWTF</p>	<p><b>NANTUCKET HARBOR / SHIMMO</b></p> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>TMDL – Water Quality</li> <li>Nantucket Harbor Watershed</li> <li>Polpis Harbor TMDL</li> <li>Severe Soil and Groundwater Conditions</li> </ul> <p><b>Recommendation:</b> Municipal Sewer at Surfside WWTF</p>
<p><b>NANTUCKET HARBOR / SHAWKEMO</b></p> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>TMDL – Water Quality</li> <li>Nantucket Harbor Watershed</li> <li>Polpis Harbor TMDL</li> <li>Severe Soil and Groundwater Conditions</li> </ul> <p><b>Recommendation:</b> Municipal Sewer at Surfside WWTF</p>	<p><b>SOMERSET</b></p> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>Small, Dense Lots</li> <li>Severe Soil and Groundwater Conditions</li> <li>Inability to Meet Title 5</li> <li>Private Water Supply</li> </ul> <p><b>Recommendation:</b> Municipal Sewer at Surfside WWTF</p>

### AREAS RECOMMENDED FOR SEPTAGE MANAGEMENT PLAN

Polpis	Pocomo	Wauwinet
Quidnet	Surfside	
Tom Nevers High Density	Tom Nevers Low Density	

### SPECIAL AREAS RECOMMENDED FOR SEWER

<p><b>TOWN WPZ</b></p> <p><b>Drivers:</b></p> <ul style="list-style-type: none"> <li>Town's Wellhead Protection</li> </ul> <p><b>Recommendation:</b> Municipal Sewer at Surfside WWTF IF IMPACTED</p>	<p><b>TOWN SEWER DISTRICT UNSEWERED &amp; PLUS - Drivers:</b></p> <ul style="list-style-type: none"> <li>TMDL – Water Quality</li> <li>Nantucket Harbor Watershed</li> <li>Polpis Harbor TMDL</li> </ul> <p><b>Recommendation:</b> Municipal Sewer at Surfside WWTF</p>
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# *Surfside WWTF Improvements Project Update*

- MassDEP Approved Expansion Up to 4.0 MGD
  - Supports All Needs Areas From CWMP Update
  - No Additional Discharge Beds Needed
  - Groundwater Discharge Permit – Monitors Water Quality Testing at TMDL Locations
- MassDEP Approved State Revolving Fund (SRF) Loan at Zero Percent Interest – 20 Years
- Highest and Best Use of Surfside WWTF
  - Madaket WWTF Eliminated
- Final Improvements Project Out to Bid Summer 2016
  - \$8.8M 2015 ATM Approved Project - Currently Under Design



# *Aerial View of Surfside WWTF*



# *April 2, 2016 ATM Sewer Implementation Plan*

## *Design & Construction of*

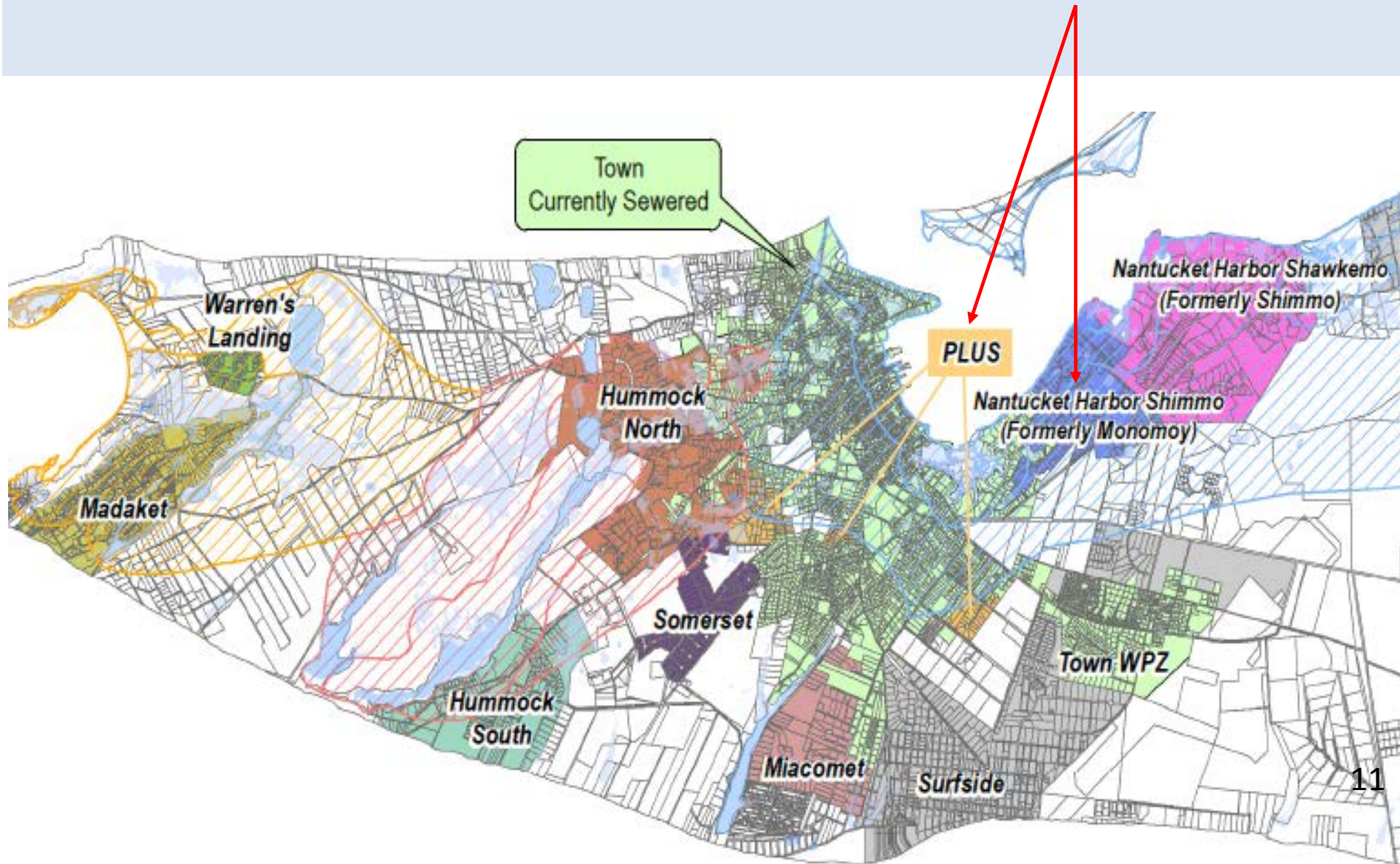
### *“Nantucket Harbor Shimmo” and “PLUS”*

- Phase 1 - Nantucket Harbor Shimmo (Formerly Called Monomoy)
  - If Approved – Construction Starts 2017
- Phase 2 - PLUS (Larger Neighborhood In-fill Areas Within or Adjacent to the Existing Town Sewer District)
  - If Approved – Construction Starts 2019



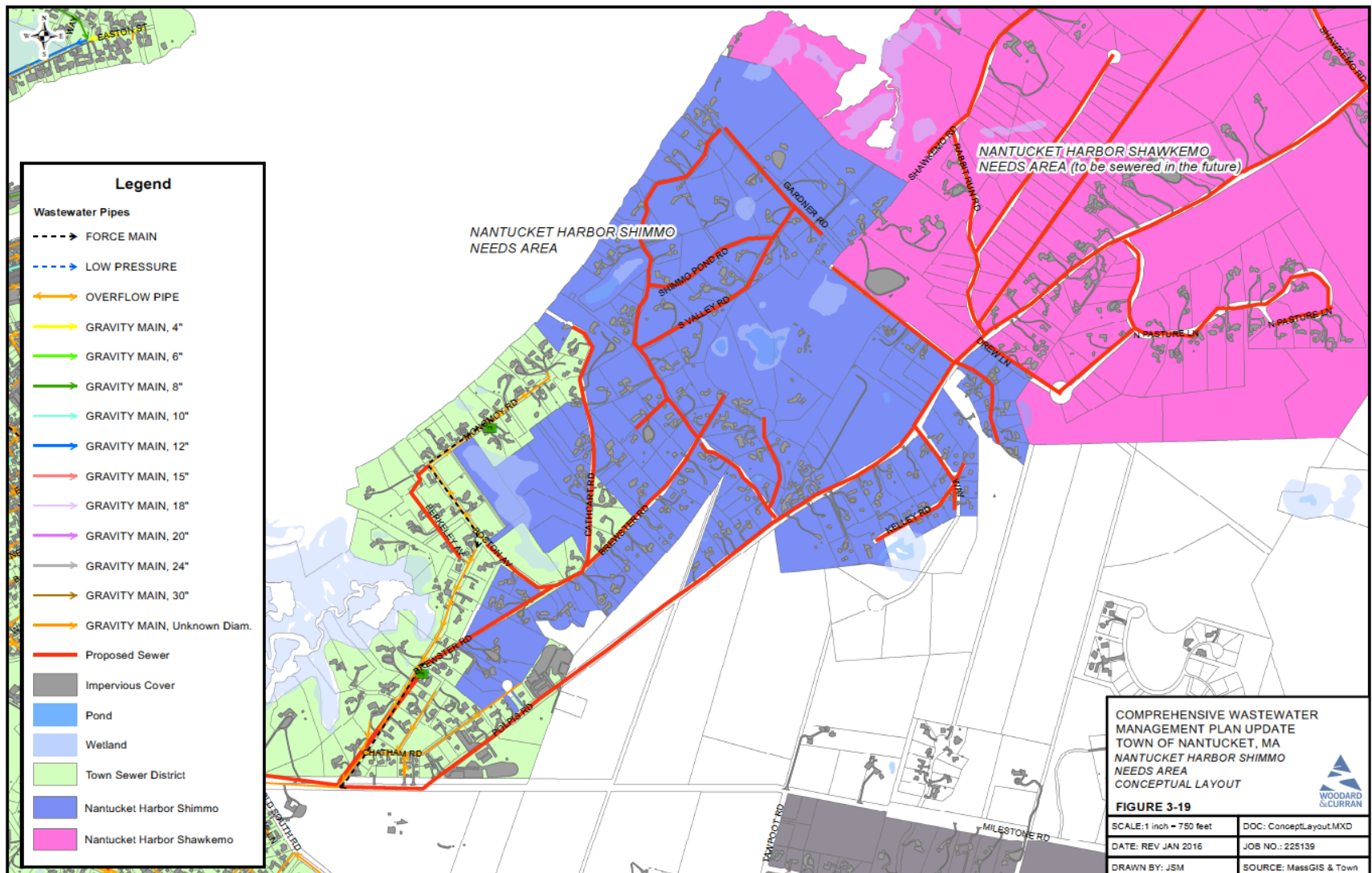


# 2016 Annual Town Meeting Sewer Locations

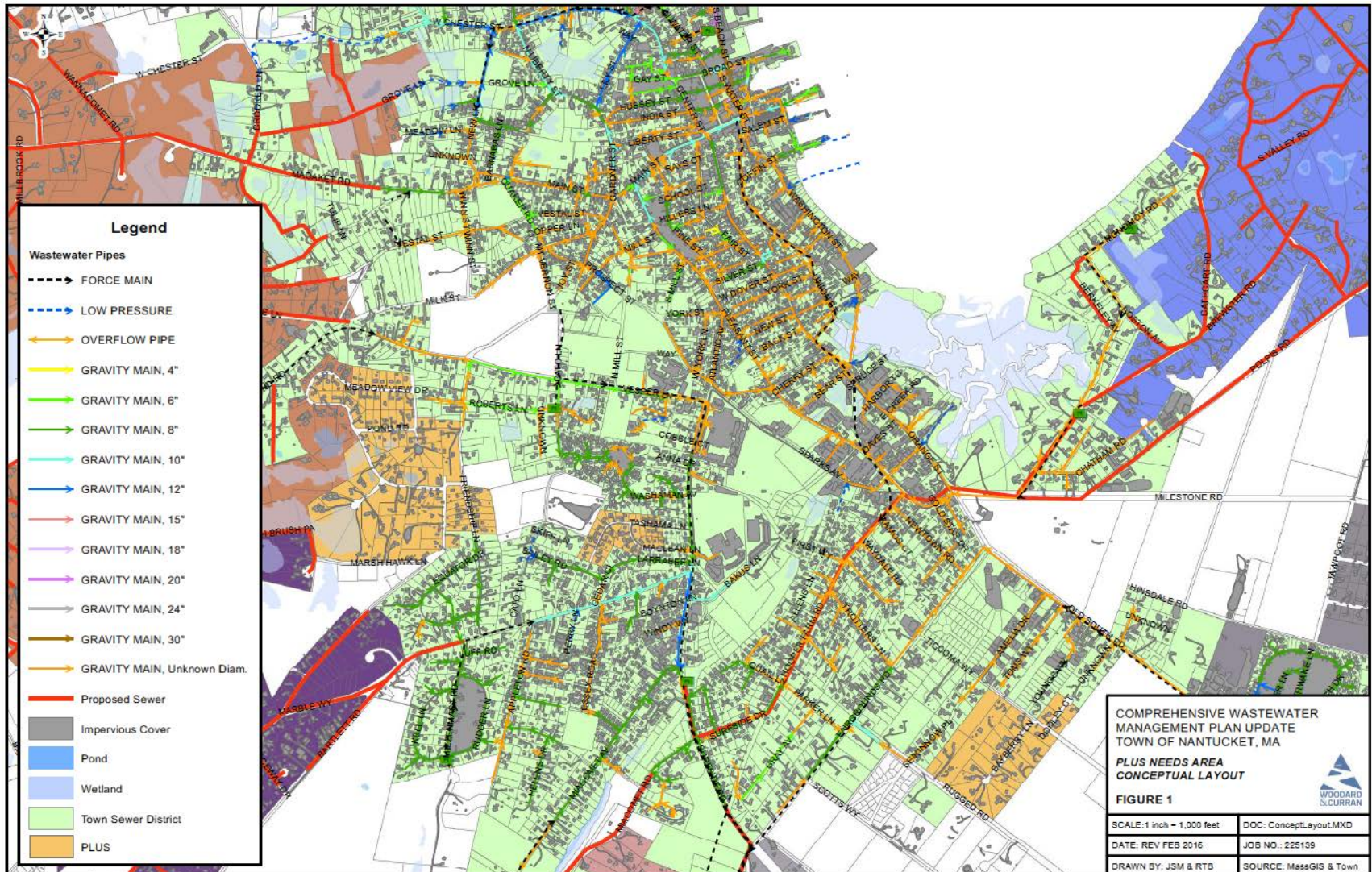




## Phase 1 Sewer Location



# Phase 2 Sewer Location





# *Overall Estimated Project Costs*

## Phase 1 – 2017 Cost Estimate

- Nantucket Harbor Shimmo (Formerly Called Monomoy)
- Design - \$ 2,782,916.
- Construction - \$25,046,246.

TOTAL \$27,829,162.

## Phase 2 – 2019 Cost Estimate

- PLUS (Larger Neighborhood In-fill Areas Within or Adjacent to the Existing Town Sewer District)
- Design - \$ 1,309,821.
- Construction – \$11,788,385.

TOTAL \$13,098,206.



# *Funding & Financing: Capital Recovery Plan*

- SRF Loan at Zero Percent Interest
  - Paid Over 30 Years
  - Costs Savings
    - \$13,500,000 Over Life of Loan
- Costs to be Apportioned
- Betterments
  - 25 Percent to Property Owner
- Taxpayers
  - 75 Percent on General Tax





# *Funding & Financing: Estimated Betterments*

- Nantucket Harbor Shimmo
  - \$20,300 for Primary Dwelling = 1 SEU
  - \$10,150 for Secondary Dwelling (where applicable)=.5 SEU

Total \$30,450

- Financed over 30 Years - Estimated at \$90.12 Month

- PLUS
  - \$11,800 for Primary Dwelling = 1 SEU
  - \$ 5,900 for Secondary Dwelling (where applicable)=.5 SEU

Total \$17,700

- Financed over 30 Years - Estimated at \$52.17 Month



# *Estimated Project Costs to Taxpayers*

*Using Average Assessed Property Values, the following are the Estimated Annual Cost Impacts to the Taxpayers for Each Project:*

- Average Assessment of \$1,784,378
  - Nantucket Harbor Shimmo - \$66.55
  - PLUS - \$31.32
- Average Assessed Value of \$1,144,544 Year Round Residential
  - Nantucket Harbor Shimmo - \$42.69
  - PLUS - \$20.09



# *Estimated Private Property Costs*

## *Average House Connection Costs May Include:*

- Permitting, Installation of House Connection & Abandoning Septic System
  - Base Average \$4,000
  - Landscaping/Restoration – Individual and Site Specific
- Sewer Connection Fee Includes:
  - Administrative Costs to Connect - \$500 for April 2016 ATM Projects
- Sewer User Fee includes:
  - Annual Cost to Maintain Sewer - Estimated at \$1,200 per year
- Privilege Fee Includes:
  - Fee to Offset 2005/2006 Surfside WWTF Upgrades - \$6,322
- May Be Electrical / Plumbing Work – Site Specific



# *Estimated Project Costs to Taxpayers*

*Using Average Assessed Property Values, the following are the Estimated Annual Cost Impacts to the Taxpayers for Each Project:*

- Average Assessment of \$1,784,378
  - Nantucket Harbor Shimmo - \$66.55
  - PLUS - \$31.32
- Average Assessed Value of \$1,144,544 Year Round Residential
  - Nantucket Harbor Shimmo - \$42.69
  - PLUS - \$20.09





# *2016 Annual Town Meeting*

- Two Warrant Articles:
  - “Nantucket Harbor Shimmo” and “PLUS”
    - Adding Needs Areas Parcels to Town Sewer District
    - Approve Design and Construction
- 2016 ATM Follow Up
  - Ballot Questions on April 12, 2016



# *What If We Choose To Do Nothing?*

The Town has been issued TMDLs (a regulatory term in the U.S. Clean Water Act, describing a value of the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards for the subject estuaries) in Nantucket, Polpis and Madaket Harbors, as well as Sesachacha Pond and has an order pending in Hummock Pond.

***If the Town chooses NOT to do anything, EPA with MassDEP has the authority to issue orders with fines to mandate restoration of the Town's waters under its own terms and conditions.***

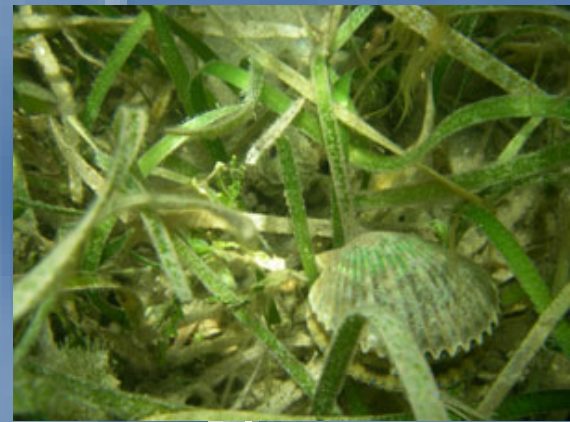


# *And what Would Doing Nothing Cost Us?*

- *We Will Lose SRF Funding*
  - *This Amounts to \$13,500,000*
- *Increased Construction Costs*
- *We Will Lose the Local Control of the Projects*
- *Administrative Consent Order Determines:*
  - *When to Do the Project*
  - *How to Do the Project*
  - *How to Pay For the Project*



# Board of Selectmen Wastewater Plan Update QUESTIONS & ANSWERS



## Nantucket Harbor Embayment System Total Maximum Daily Loads For Total Nitrogen



(Report # 97-TMDL-2 Control #249.0)  
COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF ENERGY AND ENVIRONMENTAL AFFAIRS  
IAN A. BOWLES, SECRETARY  
MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION  
LAURIE BURT, COMMISSIONER  
BUREAU OF RESOURCE PROTECTION  
GLENN HAAS, ACTING ASSISTANT COMMISSIONER  
January 28, 2009



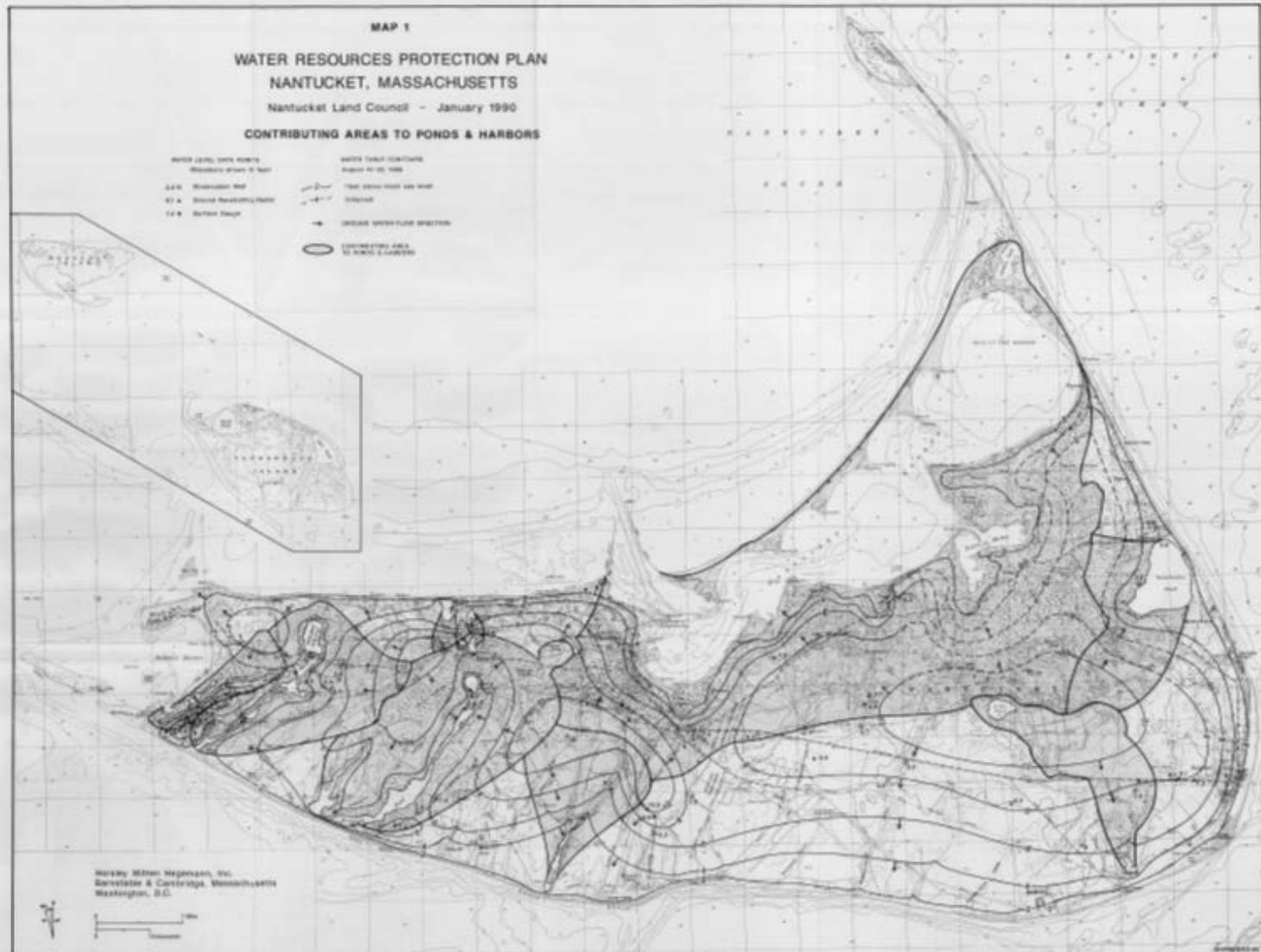


# Board of Selectmen Wastewater Plan Update

## BACK-UP SLIDES



## Contributing Areas to Waters



**Nantucket Harbor Sampling Stations**

**Legend**

- Harbor Sampling Stations
- 10 Ft Contours

**Roads TYPE**

- PAVED
- UNPAVED
- SAND TRACK

**Hydro TYPE**

- POND
- STREAM
- WETLAND

1 inch equals 1,375 feet

4,000 2,000 0 4,000 Feet

**Station 1**

**Station 2**

**Station 3**

**Station 4**

**Station 5**

**Station 6**

**Station 7**

**Station 8 N**

**TMDL Location**

**TMDL Location**

**Town of Nantucket - GIS Mapsheet**

**Data Sources:**

The geographic data on this mapsheet is derived primarily from the National Wetlands Inventory (NWI) and the National Hydrography Dataset (NHD) for the Town of Nantucket. The data is derived from the National Wetlands Inventory (NWI) and the National Hydrography Dataset (NHD) for the Town of Nantucket. The data is derived from the National Wetlands Inventory (NWI) and the National Hydrography Dataset (NHD) for the Town of Nantucket.

The data on this mapsheet represents the efforts of the Town of Nantucket and other cooperating organizations. The data is derived from the National Wetlands Inventory (NWI) and the National Hydrography Dataset (NHD) for the Town of Nantucket. The data is derived from the National Wetlands Inventory (NWI) and the National Hydrography Dataset (NHD) for the Town of Nantucket.

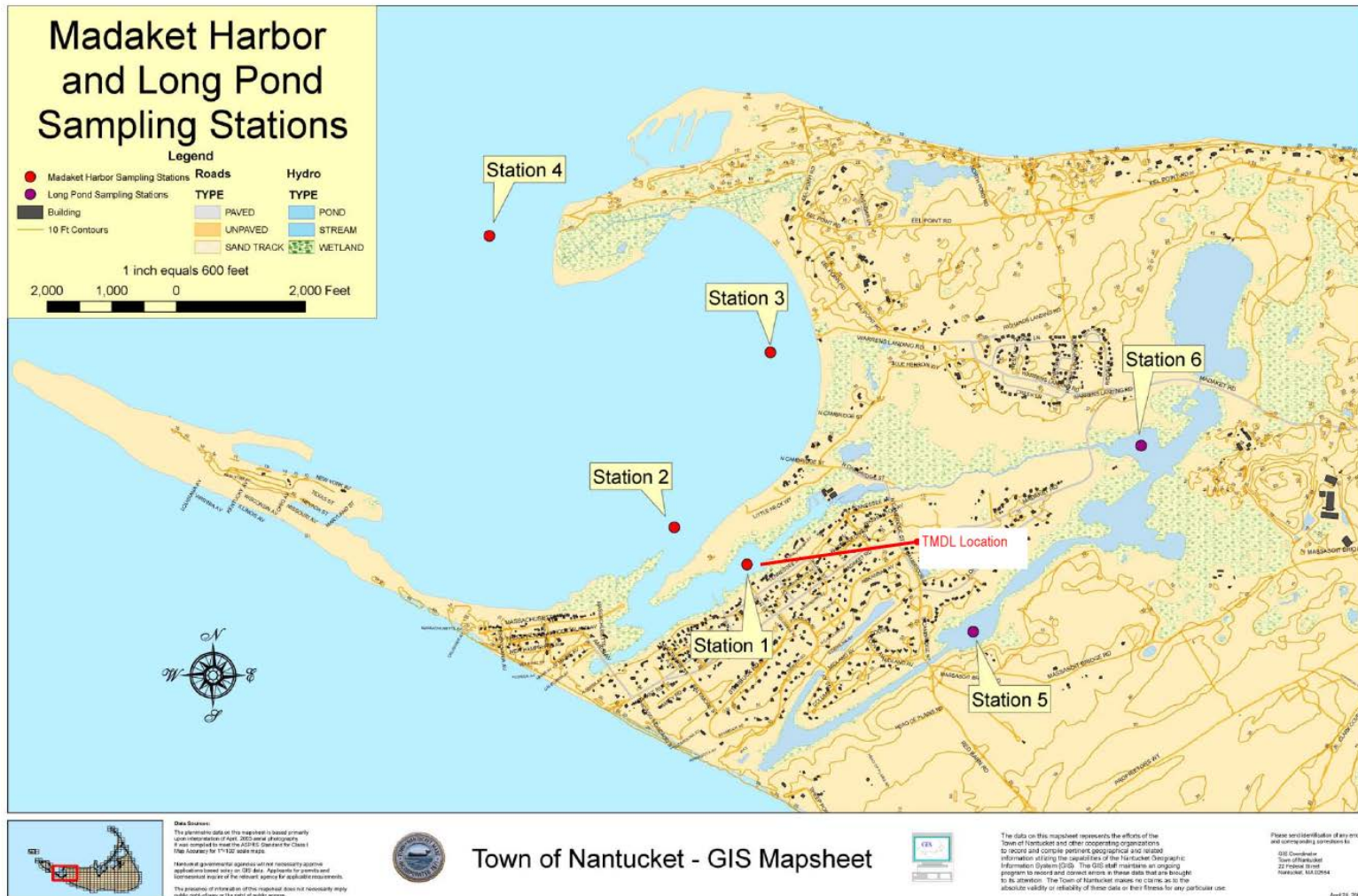
Please contact the Town of Nantucket for more information.

GIS Coordinator  
Town of Nantucket  
22 Harbor Street  
Nantucket, MA 02554

4/24/2018



# Madaket Harbor TMDL Location



# Sesachacha Pond TMDL Location

MASSACHUSETTS ESTUARIES PROJECT

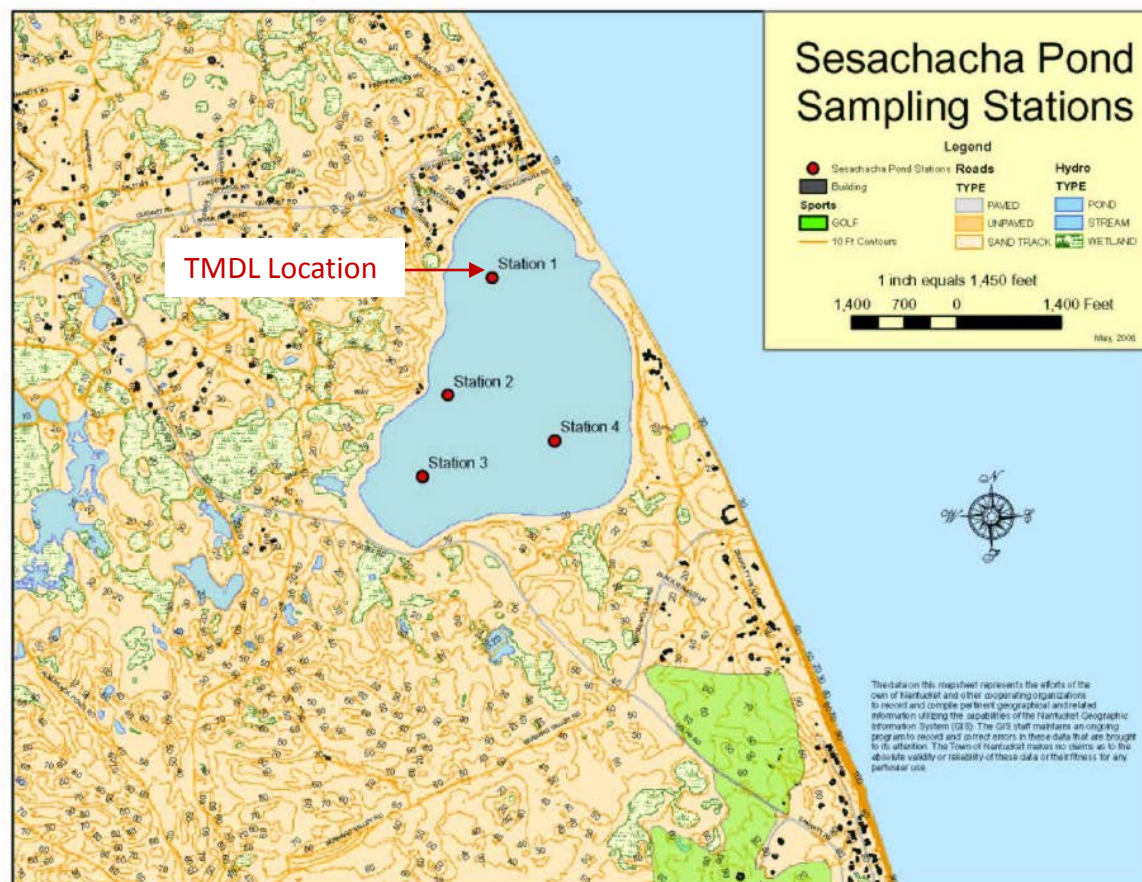


Figure II-1. Town of Nantucket Water Quality Monitoring Program sampling stations for Sesachacha Pond as provided by the Town of Nantucket Marine Department.



# Hummock Pond TMDL (pending) Location

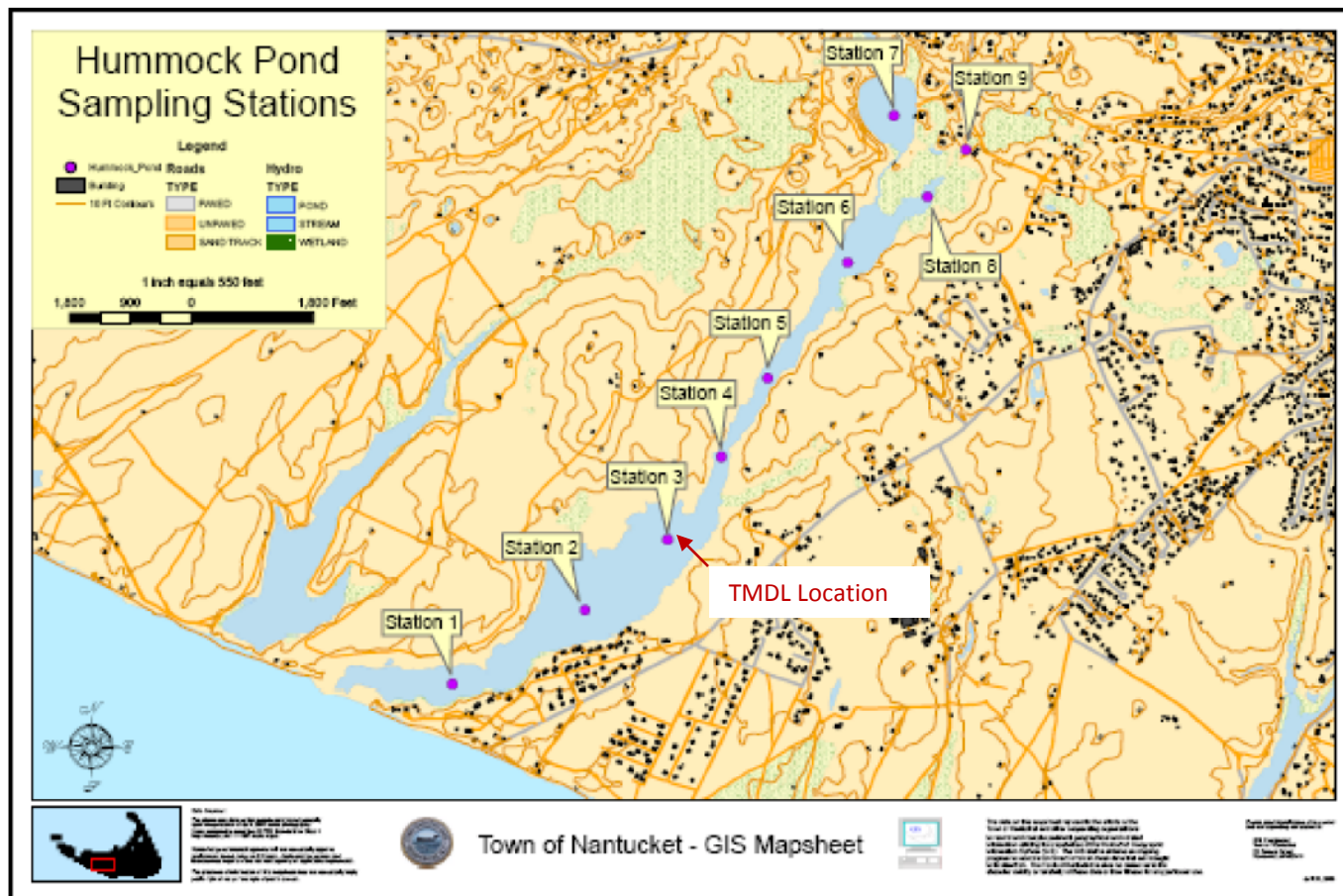


Figure II-1a. Town of Nantucket Water Quality Monitoring Program. Hummock Pond Estuarine water quality monitoring stations sampled by the Nantucket Marine Department (2002-2007).



## Excerpt from Nantucket Harbor TMDL from MassDEP:

### **Reasonable Assurances**

MassDEP possesses the statutory and regulatory authority, under the water quality standards and/or the State Clean Water Act (CWA), to implement and enforce the provisions of the TMDL through its many permitting programs including requirements for N loading reductions from on-site subsurface wastewater disposal systems. However, because most non-point source controls are voluntary, reasonable assurance is based on the commitment of the locality involved. Nantucket has demonstrated this commitment through the comprehensive wastewater planning that they initiated well before the generation of the TMDL. The town expects to use the information in this TMDL to generate support from their citizens to take the necessary steps to remedy existing problems related to N loading from on-site subsurface wastewater disposal systems, storm-water, and runoff (including fertilizers), and to prevent any future degradation of these valuable resources. Moreover, reasonable assurances that the TMDL will be implemented include enforcement of regulations, availability of financial incentives and local, state and federal programs for pollution control. Storm-water NPDES permit coverage will address discharges from municipally owned storm-water drainage systems. Enforcement of regulations controlling non-point discharges include local implementation of the Commonwealth's Wetlands Protection Act and Rivers Protection Act, Title 5 regulations for on-site subsurface wastewater disposal systems and other local regulations (such as the Town of Rehoboth's stable regulations). Financial incentives include federal funds available under Sections 319, 604 and 104(b) programs of the CWA, which are provided as part of the Performance Partnership Agreement between MassDEP and EPA. Other potential funds and assistance are available through the Massachusetts Department of Agriculture's Enhancement Program and the United States Department of Agriculture's Natural Resources Conservation Services. Additional financial incentives include income tax credits for Title 5 upgrades and low interest loans for Title 5 on-site subsurface wastewater disposal system upgrades available through municipalities participating in this portion of the state revolving fund program.

As the town implements these TMDLs the loading values (kg/day of N) will be used by MassDEP for guidance for permitting activities and should be used by the community as a management tool.